NEW PUBLICATIONS.

NEWCOME'S POPULAR ASTRONOMY. POPULAR ASTRONOMY, By Shiox Newcorn, LL.D., Professor, United States Naval Observatory, 8vo. pp. 196, Harper & Brothers.

A difficult task has been undertaken in the volume. Professor Newcombins endoavored to write book that would be of interest to an intelligent reade not specially versed in astronomical science, while to treatise units also serve, to some extent, the uses a scientific meh, as well as for general purposes of refer ence. It is not a "popular astronomy" in the rense of being written at the popular level; it is certainly no ant for children or school-boys. On the other hand there is no attempt at flights of language or imagina tion. The great facts of astronomy, which at the presenlay are somewhat trite, are fully presented, as they our to be, in a complete treatise on that science. Nevertheless the book is interesting in the conventional sense of the wearles the reader's attention. It presents the newest as well as the old discoveries, and is free from the errors which may most of the treatises on astronomy that are designed for non-professional use. Ordinary reader will appreciate the circumstance that no mathematica

formulas are employed. The method of the book is in some respects peculiar In each division of the work the history of discovery l made to subserve the purpose of explanation. Thus, is giving the views of the ancients, an opportunity is found ppear. An exposition of the Pteleficate system serve stars. Step by step the reader is led toward the theorie of Copernious, Kepler, and Newton, and is shown why and how their hypotheses best explained the facts of observation, which have been already detailed. A great advantage is thereby gained over ordinary treatises of astronomy which present the recent knowledge first, and either give the facis nasupported, or press their screptance by means of the stern logic of geometry. In Professor Newcomb's work the great truths grow slowly. and can be measured as they grow. Full justice is done prising after reading the account of it that the system of centuries, since it served so family to explain a majority of the celestial movements. But whether or not Prefessor Newcomb has a wenkness in favor of the great Egyptian same, he certainly has none for the priestly astronomers who constructed the Gregorian calendar. He doubts whether there is any practical object gainer by uniformity between the years of the calendar and those of astronomy, and thinks that it may bereafter be conceed that the common sense of the people, who long opposed the change of calendar, was more nearly right than the wisdom of the learned. "An additional compileation was introduced into the reckoning of time, without any other real object than that of making Easter come at the right time." The Professor even regards it as possible that in the year 1900 some concerted as may be taken by leading nations with a view to a return to the old mode of reckening.

The theory of the tides is a mystery to many people who are not lacking in information on other scientific subjects. It carries no conviction to the average human raind to have this matter explained by means of geome There is the great fact that the tide rises on the side of the earth opposite the moon as well as on that which is turned toward her. Not a few people have ac-cepted the notion that the moon rulls the earth toward but I aves the water on the furthest side a little behind in the process. "Popular Astronomy" explains the matter with perfect clearness. It is shown that the earth and meen revolve around a common centre of gravity, which is within the earth, about three-fourths of the way from its centre to its circumference, and on a line from the centre of the earth to the moon. A centrifugal force is developed in this revolution. The directien of that force is, of course, outward from the centre of retation, and hence the seean on the opposite side from that centre-i. c., on the further side of the earth from the moon-bulges outward. On the side nearest the moon, her attraction is the chief cause of the ocean's rise; but there is also a small centrifugal force there, since at that point the centre of rotation is about a thou sand miles below the sen.

The comparisons used for explanation are admirable. One of the difficulties in popularizing estronomical science is the vistness with which it deals. The distances of even the nearest planets are quite meencely ble; but to provide the reader with a vague notion of the remoteness of the fixed stats is an almost useless attempt. It is, however, interesting to know that if we conceive a traveller journeying from the sun to the outermost planet of our system, at a rate of speed that would carry him to that planet in twenty-four hours, he would afterward have to keep up the same rate of travel for eighteen or twenty years, before reaching the near-ect fixed star, and must continue his journey as much longer before coming to another. Yet such a speed would carry a voyager across the Atlantic from New-York to Liverpool in less than one-teath of a second of time. An equally appropriate comparison gives an idea of spectrum analytis. Let us suppose that from an immense heap of gold, consisting of pieces of various weights, each nation should pict out the pieces that came nearest to its own coins. Then, from the remainder of the heap, let us undertake to ascertain know the weights of the coins which each nation uses. in rows according to weight. Finding that all pieces of the weight of sovereigns and half sovereigns were missing, those, we should conclude, were taken by England. The absence of pieces of five-franc weight, we should attribute to their selection by France. America would be held responsible for the departure of \$20, \$10, \$5, \$3 and \$23g weights; and so on through the pile. Comparing the heap of gold with the solar spectrum, the missing coins will stand for the dark, spectral lines; the abstraction of light, as shown by these lines, will enable us to detect what one of the chemical elements, interposed as a glowing gas, has absorbed its special comage from the golden rays of noon. For the rays which an element, when heated to a glowing gas emits, are the same which

that gas, if used as a screen for light, will absorb. In the more recent novelties of the science, if e book is a mine of information. The theories of the constitution of the sun, both ancient and modern, are very fairly presented. Father Secchi, M. Faye, and Professors Young and Langley, are allowed the benefit of their own statements of views on this subject. Professor Newcomb thinks that due weight has not been given to an objection to the theory that the photosphere is composed of clouds, floating on a gaseous a mosphere. The objection is timit the photosphere never presents eruptions like the chromosphere, although it exhibits at times the enormeus abysses which are termed sun spots. The sevenity of the surface of the photosphere gives occasion for behef that it is solid or a dense fluid. Such a condition of the exterior would not be in conflict with the theory (strongly sustained by mathematical and physical con-siderations) that the interior of the sun is gaseous, though the pressure may bring the gaseous matter nearly to the liquid conduton. So that our creat luminary may be merely a large bubble. The question as to the existence of an inten-Mercurial planet is discussed, a clusions are reached contrary to the opinions of Le Verrier. The theory that the irregularities of Mercury's or bit may be caused by a group of innumerable small planets or "planetolds," seems involved in difficulties on which even the zodateal light throws little tilumination. A very full exposition of what is called the biration of the moon, will probably bring news to people who suppose that it is because the moon swings at times, that she shows us occusionally a strip of the side that is forever turned away from the earth. The oscillation is pronounced apparent, hat not real; yet the fact remains that six-tenths of the lunar surface may, in all, be visible at different times. The notion that the moon's motions may affect our weather, is deemed unworthy of consideration. In this volume the drawings of the surface of Mars are quite unlike the seas and contineats that appear on that planet in the common books of astronomy. The resemblance of the surface of Mars to that of the earth may have been overrated. There is comfort for people who are thred of the frequent an-nouncement of new asteroids, since proof is adduced by Professor Newcomb that the number of those little planets may not be infinite. The theory that attributes heat and incandescence to Jupiter, finds favor in the Professor's eyes, but the light of the Jovian surface is regarded as faint, since it does not render the satellites visible when celipsed. The changes in Saturn's rings are admitted as a fact of observation, and the belief that they are constituted of a cloud of small saiclities seems to be supported. The orbit of the satellite of Neptune is said to be tipped over 150°; "it is, in fact, nearly upside down." The theory of a resisting medium in space is regarded as exceedingly doubtful, and the contraction of the orbit of Eucke's comet, on which that theory rests, is said to be not fully proved. No explanation yet furnished is considered satisfactory as to the constitution of comets

It will be noticed that Professor Newcomb's work is singularly free from assumption. In all doubtful matters he gives the views of both sides, and rarely undertakes to decide between them, though stating his own opinion as to the weight of evidence. Yet he does not hesitate to present the abstruce and far-reaching questions that are propounded by the science of to-day as to the arrangement of the universe, its origin and destiny. The chapters that discuss these daring speculations would interest even a superficial reader. Among the entertaining descriptions is one of the star known of Tell, plaster of Paris and other ingredients, which

as 1830 Groombridge. Though in the category of fixed stars, this object is in motion at the rate of not less than 200 miles per second. With this speed it cannot be stopped in its career by any star which it may approach, or compelled to form an orbit around a star or stargroup. Whence originated this enormous velocity? The combined attraction of all the stars known to astron o ners would not confer it. It must have begun enteld dour visible universe. The star will pass through that niverse with unchanged course. We know neither bence is came nor whither it is going. As to the proper trotions of other stars, they are so different in their direction and speed, that we must establish the stellar universe has neither the stability not the restlarity of our color system. But these and other considerations—in fact, all modern scientific discoveries and research-point to the conclusion that our universe bnd a beginning and will come to an end.

The volume is enriched by an appendix containing tables of the "ciem mis" ententated for the solar system. relucing the insteroeds; lists of double stars, star clusters, and nebulae; the parallax of the sun and of everal stars; and similar statistical information. There is also a suries of star-maps. The faults of the book are few. There are some indications that the peaced of the mathematician is a more familiar instrument than the pen of the writer. Occasionally a converse proposition s presented instead of the direct one that would have served in the argument. Two instances of this may be given. In explaining the cause of the tides, the moon's revolution round the earth is discussed, and this statement is made: "Strictly speaking, the earth does not revolve around the moon, any more than the moon around the earth." But no supposition that the earth does move around the muon had been offered. Probably the iden to be expressed, was that the moon does not revelve around the earth, any more than the earth revolves around the meen. Again, in the chapter on measuring distances in the heavens, this observation appears: "It is remarkable that among the thirteen stars of the first magnitude visible in our latitude, less then half have been found to have any measurable parallax." The fact which is here meant to be indicated as "remarkable," casurable parailax. But such inmor blemishes do not derract from the substantial accuracy of the statements. the usefulness of the volume as a book of reference, or the delight that its perusal will confer on its readers.

EVENINGS IN THE LIBRARY. By GROSSE STEWART, Jr. 12mc, pp. 254. St. John, N. R. R. A. H. MOTTOW.

The scene of this volume is in the wellfilled library of an ancient professor of literature who loved to rend and talk about his favorite antions, and had invited two intelligent young nephews to while away a few evenings in listening to his free and easy discourse on some of the prominent books and writers of the day. The "collegates divine" are mostly devoted to the brightest lights of American literature, including Emerson, Bryant, Holmes. Lengfellow, Whittier, and others, for whom the Professor electrishes a constitutional weakness, descanting on their merits with a "de-gree of eminature that is rarely met with in those who have passed the age of a college under-graduate. Indeed, he may be said to possess a new feet genius for admiration. He is not one of your cold, cynical Cornell, though not wealthy. It's well, dress neatly, enreaders who turns up his nosa whenever he can syys joy society—in brief, spend the four years of a college readers who turns up his nose whenever he can syra fault; on the other hand, he appears to be stone blind to any defects in his favorities; and treats them in a tone of panegyric whileh to critical cars has almost the sound of rhapsedy. His warmest costaces, however, may find an excuse in their evident sincerity, and as Emerson asserts that "everybody loves a lover," he will no doubt make many friends by his impassioned arders, even though they cannot follow all the lengths of his enthusiasm. Not that his comments on current literature are more barsts of feeling. He betrays a entitivated literary taste, a far more than ordinary knowledge of books, and a certain instinct for good writing which cannot suggestions which are both gent and ordinard. Thus of Thanatousias, which are both gent and ordinard. Thus of Thanatousias, which are both gent and ordinard. Thus of Thanatousias, are not to be income to Cornell with lean pursue, and no special aptitude for filling them. They cannot teach, as many do; they cannot, as do others, by a few hours of skilled work cach week in macune shore of hard-bips. A few—say fity in the little code go world—come to Cornell with lean pursue, and no special aptitude for filling them. They cannot teach, as many do; they cannot, as do others, by a few hours of laboratory carnenous the power cannot are the bor, elseviled work cach week in macune shore or wood and dravers of water. They have bore, elseviles rooms in the University outlings; study and kitchen are combined in one. The same have them are consistent who preside over them.

Nacture of hard-bips. A few—say fity in the little code go world—come to Cornell with lean pursue, and of the control of the supplied of them. They cannot teach, as many do; they cannot, as do others, by a few hours of laboratory carnenous treath as do others. They have the work each work each work each work in the latter of the present of the control of the filling them. They cannot teach, as many do; they cannot, as do others, by a few hours of hard-bips. which are both gente and original. Thus of "Thanatousis," he aptly remarks: "One finds himself stopping midway in the poem to inquire what manner of youth it was whose knowledge of human kind was so sensitive and the sonorous stanzas. The boy of eighteen writes with the fire and grasp of a man of fron soul, and with the meisive knowledge of one who had Parned well the lessons of life with the passage of the hurrying years." The secret of Longfellow's power over the hearts of his readers is thus filed with life sprang into existence, and asionished even old Rome itself, all the world proclaimed the tidings what are the nations that have culled out the pieces. We that a great genius was born smong men. In a lesser sition. His mind is surcharged with it. It must have yent. It must find an outgoing channel. If it be true that according to Rahel, the world can be astonished with the simple truth, then Emerson has long ago accomplished this feat. He has astonished the world, for the simple truth, charmingly fold, delights the reader of his voluminous works at every turn." In this strain of familiar unpretending enat the Professor wins the hearts or his young protegées to a love of good letters and of good men, refining their tastes, informing their judgments, and opening a royal road to the study of literature. His book affords an excellent introduction to the productions of American genius and culture, without the for mainty of didactic exposition.

AN ACCOUNT OF SOME EXPERIMENTS WITH PORT.
LANDCEMENT CONCRETE COMBINED WITH
IRON, AS A BUILDING MATERIAL. By THATPHER
HYATT, 410., pp. 50. Chiswick Press, London. Printed
for private circulation.

This essay opens with a severe but just upon previous methods of using iron in called fire-proof construction as defective, because the ower flange of the iron beam is left maked and expessed to flame, while it is admitted that the flange is the tie upon which the integrity of the beam depends. In the course of a series of experiments in covering flanges, Mr. Hyatt found that the strength and the fire-resisting property of the beam could be very largely increased by inclosing it cooin concrete; or rather, by substituting a cam of concrete with an iron core. The spaces between these beams do not need to be wholly filled with con erete; in fact, owing to the greater security of such cams, as well as their increased strength, other portions of a fire-proof structure may be considerably lightened Further experiments showed that the composite beam could be made of surprising strength when early the bottom flange of the iron was retained, the rest of the metal being wholly removed. Peculiar devices were used to vals, so that the metal, if heated, should not slip in the concrete. Also, a peculiar kind or Portland coment w employed, which formed a more perfect union with the fron than had hitherto been attained. The experiments tested these composite beams by furnace heat, and by loading to a breaking strain. The results, detailed and tabulated, appear to prove that by such methods, in a majority of exclutectural structures, a great improvement in strength, lightness, and fire-proof properties may be secured without increased cost. The book is freely illustrated with diagrams showing the methods of using the composite beams in different structures, but in all the new principle is adhered to, of surrounding the iron with enough fireproof material to

The saying that may be attained in the amoun of iron, by using the composite beam, is remarkable. The following is one of the comparisons: It was shows that a wrought-iron seam ten inches deep, with a bottom flange of two by one-quarter inches, and not eneased in concrete beneath, can sustain a breaking strain of only 18,272 pounds. On the other hand, Hyati uses only the bottom flange of the iron, puts a row of vertical bolts in it to keep its place in the concret covers with concrete so as to protect the tren entirely, and finds this composite beam, in an average of experi ments, strong enough for a breaking strain of 18,812 pounds, besides bearing its additional weight of concrete. About fifty composite beams, weighing from 200 to 900 pounds apiece, were broken in the testing press. Further trials were also made by heating in a furnace a slap containing composite beams so arranged as to represent the section of a floor. The slab was kept at glowing redness for five hours, and then a stream of cold water was immediately turned upon it. This severe experiment left the slab uninjured. The deflection during firing was three-eighths of an inch, but the slab straightened when cold, and in a second experiment was found capable of bearing its original load. The thickness of cement above the iron, as well as below it, was three inches. Mr. Hyatt seems not to be aware that the

has been used in the construction of several of the best SCIENCE FOR THE PEOPLE. Buildings in this city, such as that of THE TRIBUNE, the Western Unio: Telegraph Company, the 1 claware and Hudson Company, and the Post Office.

> EAYARD TAYLOR. MINISTER TO BEHLIN.

Prom The Portland Prest.
L. L. Germeny, we lend to thee a lord

Lo Germany, we lend to thee a lord
Of free fair fields of fancy, son of song,
(And look then hold him not away too long.
But grye him safe to us one day.) A word
Was snoken in his childhood's chr of Faith:
Yea thou snall follow for my sake, she saith,
Forevermore the warm light fugitive wings
(37 Song, and learn of her all hidden thungs;
Hear alten speech, and wander in strange ways,
For theat, beloved of Song, art he who brings
seeds long aslees, whose ancient life yet chings,
To scatter them for find in those late days—
Hilling the sun reserious of grison at last
Out of the morning miss that veil the Past.

II.

A sober shaled light for new made eyes, Among an anstere folk unworldly-wise, (Within the shadow of leaves and twilight sings (Within the shadow of leaves and twinght sings.
The nightingale—a post set apart,
From overmach of noise and light afar,
Match his maste sparkle as a star.
Lit of the inborn first that warm his heart.
Song led him later all about the earth—
He saw works rises and ruined of men's hards,
Cities tow built, and those long dead for dearth;
"he dusky odorous heart of Eastern lands.
Like some great flower unfoided to his gaze;
He watched the wan long light of Northern days.

For that all lands have spoken to his car,
And all days yield them to the poot's sight:
For that his touch brings shadowy forms to light— Voices long lunded his new glad voice makes clear;
For that of all lands seen, he loves his land,
Of all days sing, he sings his own day best,
Reinging all treasures gathered by his hard.
To crown the free-born maiden of the West—
Names seen fitter for he No man were fitter for his country's needs, Than this, whom Faith and Song have rendered

Poet to speak things seen with prophet's eyes; Him the young land, herr of all days and deeds, Sends as her messenger to the land that keeps The grave of Goethe, and where Schiller sleeps.

Among the singing quire let even the least
Bring ther a little song, a half-bloomed flower
Canoted in the wreaths that dock the feast,
Tubeard in midst of mightier made a powerMaster of rongs, take this one that it may
Have in thy hand its little life and day?

STUDENTS' EXPENSES AT CORNELL.

A PROTEST-WHAT IT COSIS TO LIVE IN ITHACA. Sir: Cornell has been cheapened recently by

a "Graduate," who lays bare in Tun. Tunnest his doces-tic comony, gives his yearly bills for washing as \$1.50. the college that a few plain facts should be stated about sincerts of this class. The great body of the students at

She-ichilas of lases near are not fit to start concept. They receive a bardet of "conditions" at their first examination and no staggering along under it to ise end—a very procase Fight in S Precross. They find that severe manual and he-otol labor—save in exceptional cases of rare physique—will not go together. The result is that they neither study well not work well. What, with the time consumed in becture-receive, in demostre dradgery, in more wantly dradgery on the farm—these men have little time and less inclination for thorough study. It is all very well to talk of turning from the piongle to Plate, but he was does it will no ver acquire the rare flavor of Greek culture. Even science and manneamness will not be taken into his mental system. After pitching hay for haif a day, he will not fee like wheeling with a longh problem. These are those who may do fine, but they are as one must eather the thorsend.

POSTAL METHODS AND FACILITIES.

In accordance with orders from the Departcity will begin again this meralog the weighing of all mail mailer between New-York and Chicago possing over the trunk lines. This has become necessary, as with the first of the year many changes may be made in these routes, and an average must be made of the amount of matter carried, upon which to estimate the proportion of payments to each road. This system of weighing all matter carried by the different roads will be continued for two months, and from the total thus obtained an average will be made.

Superlatendent Jackson, in charge of this district of the Raivay Mail Service, Salted, last evening, that beginning with this morning, postal cars would be run upon the train between New York and Boston, leaving this city at 10 a.m., and also upon the train leaving Boston for this city at the same hour. Speaking of additional mail service in course of arrangement through he said that, beginning on March 6, a with the first of the year many changes have been ditional mail service in course of arrangement through-out the State, he said that, beginning on March 6, a regular service would be had between Geneva, N.Y., and Weistone, Penn, over the Syraense, Geneva and Corn-ing Entirond, and that additional mail facilities were proposed in other portions of his district.

ROOKS OF THE WEEK.

AN ESSAT ON METHODS OF ARITHMETIC INSTRUC-TION. By F. W. Bardwell, B. S., F. A. A. A. S. 16mo, pp. 36. Paper. (G. P. Putnam's Sons.) \$0.15 HAND BOOK OF CERAMIC ART. By M. S. Lockwood, 1600c, pp. 137. (G. P. Putnau's Sons).......

16mo, pp. 137. (6. P. Putnam's Sens).

POITEEY: How it is Maye; Its Share and Decoratios. By Geo. Ward Nichols. 16mo, pp. 142. (G. P. Putnam's Sons).

A History of Latin Literature. By Leonhard Schmitz. LL. D. 16mo, pp. 262. (G. P. Putnam's Sons).

THE ELECTIVE PEANCHISE IN THE UNITED STATES. By D. C. McMillian, 16me, pp. 181. (G. P. Patasan's Sous.)
The Boy Engineers. By the Rev. J. Lukin. 12mo, pp. 314. (G. P. Patasan's Sous.)..... ROYAL COMMANDMENTS. By Frances Ridley Haver-gal, 16mo, pc. 160. (Auson D. F. Randolph &

Co.)...

ETERNAL HOPE, Five Sermons. By the Rev. Frederic W. Fatrar, D.D., F.R. S. 12ma, pp. 225.

(E. P. Durton & Co.).

THE EARLIER POEMS OF ELIZABETH BARRETT BROWNING—1826-1833, 16ma, pp. 253. (James Maller).

Miler).

THE ACCOUNTANT. By M. R. Powers, M. A. Svo, pp. 155. (A. S. Barnes & Co.). A HANDBOOK OF VOLUMETRIC ANALYSIS By Edward Hart, S. B. 12mo, pp. 326. (John Wiley

& Sons.).
CROICE READINGS. Edited by Robert McLain Cum-nock, A. M. 12mo, pp. 426. (Chicago: Jansen, McClurg & Co.).

ALPHA DELTA PHI CONVENTION. The next annual convention of the Alpha elta Phi, one of the best known of the college fraternies, will be held this Spring with the chapter connected ties, will be held this Spring with the chapter connected with the Wesleyan University, Middletown, Conn. The contion at the public exercises will be delivered by ex-Governor Joston L. Camberiain, of Maine, the President of Bowdom Collece. The needs of the occasion will be read by Professor Byron A. Brooks, of this city. Mr. Brooks was graduated at Wesleyan in the class of 1871. He is the author of "King Sault: a Tracedy," The fracturity convention was last held with the Middletown chapter, in the Spring of 1871.

In regard to the proposition that a delegaon of American workmen should reciprocate the visit French artisans, Commissioner-General McCornick states that he hopes "an arrangement may be made by which a delegation can attend. The spirit in which the French transfacturers extend the invitation, and the ad-vantages to result to this country, cannot be too highly estimated." made to the Philadelphia Exposition by a delegation of

The Police Commissioners have favored the tablishment of a library for the use of the force, at the Police Athletic Cub rooms, on Thirty-fourth-st. The book-cases have been in position some time, but as yet no books are in them. The men greatly desire the library.

A sweet, blue-eyed Nevada bride, clad in gossamer taile, remarket, as the electryman joined her hand with that of her lover: "I'll be gol darned if I don't believe that plaster's striking through the back of my dress."

MAGNETIC CURRENTS IN THE EARTH .- A very brief notice was given recently in this column of some experiments by Professor Richard Owen, of Indiana State University, upon the force and direction of cur-rents of earth magnetism. It should have been stated that the continuous current discovered was toward the orthwest. The strength of the underground currents varies in these experiments with the amount of metallic surface burled (from which wires lead to the galvano-meter), the length of wire, the time of day, the state of weather, and other circumstances. The magnetic me-ridian of Bloomington, Ind., is between 5° and 5° east of north. The strongest currents yet found have been soon after source, and nearly or quite at right angles to that meridian; i.e. from east-southeast to west-northwest. A less powerful current flowest that time from southeast to northwest, and a still weaker one from south south cost to north-northwest, but after crossing the magnetic meridian, the current again becomes stronger from the southeast to the northwest. By about I or 2 p. m. the currents are so modified as to mark several degrees less of galvanometer deflection for the first two directions mentioned, and several degrees more deflection for the last two directions; as if, in abort, the strength followed the impurent course of the sun. Professor Owen suclast two directions; as if, in abort, the strength topower the imparent course of the sun. Professor Own suggests that some day there may be a use discovered for the constant supply of force indicated by these earth-corrects. He times it possible that the continuous current which he fluids from metal plates showe the ground to metal places beneath it, until prove of service in hastening the growth of plants; as for instance, if forcing the rarity vegetables were held in metallic pans and connected by wires with a metallic roof.

MEASURING HEIGHTS BY BAROMETER .- A neat and easily reconceted rule for measuring heights by means of the barometer, is given in Admiral Fitzroy's treatise. The figures are of course approxi-mate, since no allowance is made for temperature; but they will eften serve where accuracy is not required, and the height to be estimated does not exceed a quarter

NEW-JERSEY'S CLAYS.-The report of the Geological Eurycy of New-Jersey includes a volume solely devoted to the clay deposits. These, according to the map formshed, eccupy a strip nearly on a line from South Amboy to Trenton, with a width narrowing from eight to five miles. After reaching the Delsware, the width of the clay in the State is much reduced, but its southwest direction is continuous along the border between New-Jersey and Pennsylvania. South of the clay, adjoining and parallel to it, is an area of green sand mark, of 'a width varying from twenty to ten unles, stricking southwesterly across the State from Sandy Heok on the Atlantic to Salem on the Delaware. These depeals have long been known, but their value and ex-tent have not been recognized till very recent years. the soldiers. About the beginning of this century, a manufacture of stoneware pottery from this clay was late as 1840. In 1874, the amount of tire-clay and stoneware clay due annually near South Amboy was estithe mars respecting the clay of each locality, and in most the target a careful analysis. Advice is at a tendered as to become the class in localities and yet productive, and

annual meeting of the Euffalo Society of Natural Sciences, Professor A. E. Grote read a report, showing remarkable progress of the Society during the year. Among its other treasures chumerated, is a collection of North American Tepidopterous Tassects. Of the northde there are gathered 2.078 specimens, showing 966

fessor W. Hammond Hall recently delivered a lecture on trringing, at San Francisco. He pointed out grave diffientities that have searcely yet had full consideration in popular projects for irrupation works throughout the State. He calculates that where the population is less bassage of the hurrying years." The secret of Longfellow's power over the hearts of his readers is thus described: "Away from the towns and cities, it estuage to the hearts of his readers is thus assigned excited the towns and cities, it estuages to hamber, the sweet singer of Cambridge is known and loved, and well-thunded volumes of his poems show how much he is read and enjoyed. His audiences are larger than the Laurente'a. He appears to a wider circle. His humanny is not broader, but inspectly has, more soul in it, and it reaches the heart quicker, and brings out the better nature which is in man. His songs have been written for the people, for the laboring classes, who work out in the fields and the fields represented for them, and we find his works at their firesbies, such hard, brown hands turn the leaver." Of all the Professor's heroes, Emerson appears to bear the pain. A sample solution is given of the riside of his untime. "When Michael Augelo struck the marible block in historic Florence three cannels ago, and a farrer filled with life sprang into existence, and associated with large and the carrier of the mistoric florence three cannels ago, and a farrer filled with life sprang into existence, and associated with large and the carrier of the maximum of absorption—the time for that would have a sprangement of students. He would be a small. It would not say a word in disparagement of students that would enhance that would enhance that where the population is less a significant of the thousehold. He wand he was a strength of the thousehold the disparagement of students for the wond because for them. There are at least four diverse souls in the state, that would consume widely different quantities of water is required. There are a least four diverse souls in the state, that would consume widely different quantities of water is required. There are a least four diverse water is required. There are a least four diverse water is required. There are at least that the state, that would be such that the state, varying from seven to twenty years. The professor thought that each district should pay for its own regaring works as if needed them, and that what the Stote should do at present towned the work was simply to have a full topographical and hydrographical survey of its domain.

RISKING THE WRATH OF PALLAS.-It appears com a statement in The Country, that a serious contest servech-owls and editors, ending fatally to the embatants on one slife, is possible even when no open account, the editors of the newscaper referred to, have ererch owl, Scops asio, if approached in twilight or on a dark day, attacked the intruder on the premises even made with the beak, and the owl draws blood. The seeditorial staff is thus briefly narrated: "The bird seemed to have no fear, and a pair that attacked us in this way, were easily khied with a short stack."

RAILEOAD SPEED AND ACCIDENTS. - The formous answer of George Stephenson to the Parliament ary inquiry as to what would be the consequence of a great increase of speed upon railways, remain as true or, Herr Scheffler, has apparently found that answer "Loss of life"-too brief for his satisfaction, and by an elaborate comparison of statistics and computations concludes that the danger of accidents to life or limb mercases with the square of the speed of the train. From this it appears it would require a vastly higher speed than is usually attempted, to decode a passen ger's risk of fulling through an unsafe bridge. The chances of damage in the railway track or the rolling-tack of the read are still be a affected by greater rapid-ity of trave, since they increase only in proportion to the rails of the speed. The latter feature is not a reas-suring consectaon; processors may have cause to wish that they were reling-stock.

DECLINE OF MANUAL ARTS IN GERMANY .- A correspondent of The Management's Review, who has been inveiling through Germany, describes many instances of the inferior work now produced by hand labo repair anything, the result was a mere botch; and now ock was little better. Tallers and abounders no longe make goods that Bt; farulture falls to pieces; window takes are loose, and so on, through a long catalogue ful workmen are attracted to other lands by higher offers of pay, while these that remain are about as much spotted as helped by the scientific cramming and alender practical knowledge they get at the technical schools under the State system of cincation.

MALE AND FEMALE AILANTUS.-It is well known to botanesis that affantus trees are of two kinds-male and female-and that the ones that bear stuminate blossoms are responsible for the evil odor of the tree, the pistillate blossoms having no seent. Hence, it has often been proposed to cut down all the trees that bear staminate blossoms, and plant in their place the pistil bearers. It is believed that such a course would redeem the reputation of the tree, as it is useful for single purposes and as of good shape. But there is an instance recently recorded by The Botanical Bulletin, of an abnormal performance, that makes it doubten whether permanent success would attend the proposed remody. An adaptus which has hitherto borne standthate flowers, hast year produced pistoriate blessoms on one branch, succeeded by perfect full. Now, if the pis-tulate tree should take to similar freaks, there would be nothing gained by substituting them for the smell-BRACHIGPODS TENACIOUS OF LIFE.-Profes-

sor Edward 8. Morse has brought with him, from Japan, some living specimens of lingula, obtained there from the sea coast. These should be accounted the least troublesome of all aquarium tenants, since they have been kept since August 20 in a small glass jar, and the sen-water it contains has only been twice enanged in the six months, yet none of the linguin have died. This circometance, showing tenacity of life under most unfavorable circumstances, may serve to explain the survival of the brachtopods, with scarcely perceptible changes of form, from silurian ages to the present. In his study of the Japanese ilurula, Professor Morse has discovered new anatomical facts supporting his layer these that the

brachiopods are more nearly allied to the worms than to the mollusks.

RELIGIOUS INTELLIGENCE. Fifteen hundred clergymen of the Church of

England have signed a protest against war with Russia. The local option license law has been defeated in the Lower House of the Pennsylvania Legslature by a vote of 78 to 75. It is certain to come up letter the next Legislature.

The circulation of Methodust periodicals, at

the present time, is officially reported to be an follows : Christian Advocate, New-York, 61,000; Western Christian Advocate, 18,400; Northwestern Christian Advocate (Chicago), 16,000; Christian Avologist (German), 15, 000; Quarterly Review, 6,500.

The American Synod of the Moravian Church meets this year in Hope, Ind. An effort is making to have the place changed to Philadelphia. The American Province of the Moravians has two divisions, North era and Southern. In the Northern are fifty-one churches; the Synod will be of the Northern division.

The Rev. Charles B. Sing, of the New-York East Conference of the Methodist Episcopal Church, whose death, on February 28, has already been annonneed, was a graduate of the United States Military Academy at West Point. He end filled important pas-teral positions in New-York and Brooklyn, and had also been Preshiting Eider. Notice has been given to the British House

of Commons of a motion "for a royal commission to inquire into the causes which keep asunder the Presbyterian churches of Scotland, with a view to the removal of any impediment which may exist to their recognition in the National Church, as established at the Reformation The Congregationalist of this week states:

"It is now definitely announced that Messrs, Moody and Sankey will begin a series of meetings in the Boston Tabernacle, on Sanday, March 10, and remain but two weeks, after which they go to New-Haven."
Mesors Needland and Cato have succeeded Mr. Morebouse in the helding of meetings in Portland, Maine. Dr. Reynolds, the "red ribbon" temperance

ecturer, is having great success in Chicago. once, of that city, says of him : "He appears to have taken hold of the work here just in the right way. The ministers and other Christian men and women are rally ing to his support. He is not so much lecturer as organ izer. Mostlings are being hold every evening in different ports of the city." Efforts are making to resist the establish-

ment of the Roman Catholic Interarchy in Scotland. A

inference of Protestant delegates met recently in Edin.

burgh and took measures for a vigorous agitation of the country. Arrangements are made for public meetings in all the principal Scotch cities. One Scotchman has subscribed \$5,000 to a fund which is to be raised to deuses of a legal res The Churchman says of the late William Welsh, of Philadelphia, that he was, without doubt, the foremost layman of the Protestant Epizcopal Church. His patish work in Frankford, Philadelphea, was of the madexiensive kind. It comprehended various charif-ant associations of working people, of all of which he was a premater, and peaching services. Mr. Welsh was an extress and effective by preacher.

The Baltimore Methodist Episcopal Conference, which met on Wednesday in Comberland, Md., has a Preachers' Aid Society, whose invested fund amounts to \$74,000. The society has placed \$3,500 at the disposal of the conference for the relief of needly precious this year. A book depository is maintained in Baltamore, which is in possession of valuable business premises. Its profits for 1877 were \$2,500.

The Rev. E. P. Hammond, when holding meetings at Zanesville. Ohio, had the aid of both a choir and an orchestra. According to The Zanesville Daily Courier, cabinet organs, five in all. In addition to these instru-les, and in the rear of the instrumental performers, full 300 singers, soprano, contrato, tenor and bass voices, of marked up in one mass of delightful confusion."

The Rev. P. O. Oakey presents facts in The New-York Observer, intended to show that the oldest existing Presbyterian church in the United States is that at Jamaca, Long Island. This honor has been heretotere chained for the church at Reboboth, Maryland. Pressprehm was high a series as established in Jamaca as early as 1662. "December ye 2016, 1662," a committee was appunied "to make ye rate for ye minister's louise, and transporting ye minister." From this data the Jamaca The debate in Scotland over the standards

still goes on. The Rev. Fergus Ferguson has muswered the questions of the Glasgow Presbyters by the publica-tion of a defence of his doctrinal position. The Rev. David Macrae has recently becomed in Glasgow on the "Use and Abuse of Creeds." Professor Smith has answered the energes of the Aberdeen Presbytery in a panishlet of sixty pages. He asks toleration of the views expressed in his Encyclopiena article on the Serip-tures. "I do not," he said, "ask the Prechytery to ap-prove my view, hat only to recognize their chain to toleration until they are confirmed or refuted by scholarly arguments in the continued progress of Biblical study."

There are now in the State of New-York five Protestant Episcopal bishops, having charge of as many dioceses, and 76,644 communicants. The first convention of the original New-York diocese was opened June 22, 1785. There were then in all the five eleganical. The first division occurred in 1838, re-uniting in the creation of the diocese of Western New-York. This was also divided in 1868, creating the dis-York. This was also divided in 1808, creating the mo-case of Central New-York. The original New-York dio case was again divided in 1808, at which time Long Island and Albany were made separate dioceses. Not-withstanding these deductions from its strength, the New-York diocese still has 300 dergymen and 20,000

On Saturday, February 23, the Universalist aggregaters of Boston and its vicinity met and adopted a declaration of their orinions in relation to future punishment. Its essential points are the following: "(1) As holiness and happiness are inseparably connected, so we believe that all sin is accompanied and followed by mercry; it using a lixed principle in the Divine govern-ment that God renders to every man according to his works. (2) Till the requisitions of Divine instee are obeyed, justice administers such discipline, including both chastisciaent and instruction, and for as long a oc-riod as may be necessary to secure that obedience which it ever designeds. (3) We believe that repentance and salvation are not limited to this life. Whenever and wherever the slaper truly turns to God, salvation will be found." misery; it being a fixed principle in the Divine govern-

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